

CLAIMS:

1. A method comprising:
providing cardiac resynchronization to a heart during a first time period; and
refraining from providing cardiac resynchronization to the heart during a
second time period.
2. The method of claim 1, wherein the first time period is a fraction of a day and
wherein the day is equal to the first time period plus the second time period.
3. The method of claim 1, further comprising providing cardiac
resynchronization to the heart during a third time period, wherein the first time period
is a first fraction of a day, wherein the third time period is a second fraction of a day,
and wherein the day is equal to the first time period plus the second time period plus
the third time period.
4. The method of claim 1, further comprising:
providing cardiac resynchronization to the heart during the first time period
commencing at a first reference time; and
providing cardiac resynchronization to the heart during a third time period
commencing at a second reference time.
5. The method of claim 4, wherein the first time period precedes the third time
period and wherein the first time period is of shorter duration than the third time
period.
6. The method of claim 4, further comprising:
receiving instructions to provide cardiac resynchronization to the heart during
the first time period commencing at the first reference time; and
receiving instructions to provide cardiac resynchronization to the heart during
the third time period commencing at the second reference time.

7. The method of claim 1, wherein providing cardiac resynchronization to the heart comprises:

- sensing an atrial event;
- delivering a bi-ventricular pace after the atrial event.

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8. The method of claim 1, further comprising receiving instructions to provide cardiac resynchronization during the first time period.

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9. The method of claim 1, further comprising delivering a pacing pulse to a single chamber of the heart during the second time period.

10. A method comprising:

- providing cardiac resynchronization to a heart in response to a first sensed event; and
- refraining from providing cardiac resynchronization to the heart in response to a second sensed event.

11. The method of claim 10, further comprising:

- receiving a ratio of X:Y; and
- performing cardiac resynchronization X times for every Y sensed cardiac events.

12. The method of claim 11, further comprising:

- receiving a second ratio of X2:Y2; and
- performing cardiac resynchronization X2 times for every Y2 sensed cardiac events.

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13. The method of claim 10, wherein providing cardiac resynchronization to the heart comprises:

- sensing an atrial event;
- delivering a bi-ventricular pace after the atrial event.

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14. The method of claim 10, further comprising delivering a pacing pulse to a single chamber of the heart in response to the second sensed event.

15. A method comprising:

5 sensing an atrial event;

determining whether a bi-ventricular pace is indicated; and

delivering a bi-ventricular pace after the atrial event when the bi-ventricular pace is indicated.

10 16. The method of claim 15, wherein delivering a bi-ventricular pace after the atrial event comprises delivering a bi-ventricular pace following a delay period that follows the atrial event.

17. The method of claim 15, further comprising:

incrementing a counter after the atrial event; and

determining whether a bi-ventricular pace is indicated based upon the counter.

18. The method of claim 15, further comprising delivering pacing pulse to a single ventricle after the atrial event when the bi-ventricular pace is not indicated.

20 19. The method of claim 15, further comprising receiving a ratio of X:Y, wherein the bi-ventricular pace is indicated X times for every Y sensed atrial events.

25 20. The method of claim 15, further comprising receiving a time period, wherein the bi-ventricular pace is indicated for atrial events occurring in the time period.

21. A method comprising:

receiving a ratio of X:Y;

sensing a cardiac event; and

30 applying a synchronized cardiac pace in response to the cardiac event,

wherein X represents a number of synchronized cardiac paces,

wherein Y represents a number of sensed cardiac events, and

wherein X is less than Y.

22. The method of claim 21, further comprising performing cardiac resynchronization X times for every Y sensed cardiac events, wherein performing cardiac resynchronization comprises:

5 delivering a first pace to a first chamber of a heart; and

delivering a second pace to a second chamber of the heart synchronized with the first pace.

23. The method of claim 21, further comprising

10 receiving a second ratio of X2:Y2, wherein the second ratio X2:Y2 is different from the ratio X:Y; and

performing cardiac resynchronization X2 times for every Y2 sensed cardiac events, wherein performing cardiac resynchronization comprises:

delivering a first pace to a first chamber of a heart; and

delivering a second pace to a second chamber of the heart synchronized with the first pace.

24. The method of claim 21, wherein sensing a cardiac event comprises sensing an atrial event.

25. The method of claim 21, wherein synchronized cardiac paces comprises biventricular paces.

26. A device comprising:

25 a pacing circuit that applies cardiac resynchronization to a heart; and

a processor that controls the pacing circuit to apply the cardiac

resynchronization during a first period and refrain from applying the cardiac resynchronization during a second time period.

30 27. The device of claim 26, further comprising memory that stores the duration of the first period.

5 28. The device of claim 26, further comprising:
 a first pacing electrode disposed proximal to a first chamber of a heart; and
 a second pacing electrode disposed proximal to a second chamber of the heart;
 wherein the processor controls the pacing circuit to apply the cardiac
resynchronization to the heart during the first period via the first pacing electrode and
the second pacing electrode.

10 29. The device of claim 28, wherein the first chamber is the right ventricle and the
second chamber is the left ventricle.

15 30. The device of claim 26, further comprising a sensing electrode disposed
proximal to the heart, wherein the processor senses a cardiac event via the sensing
electrode and applies cardiac resynchronization in response to the sensed event.

20 31. A device comprising:
 a pacing circuit that applies a synchronized cardiac pace to a heart;
 a processor that senses a cardiac event and controls the pacing circuit to apply
the synchronized cardiac pace in response to the cardiac event; and
 memory that stores a ratio X:Y,
 wherein X represents a number of synchronized cardiac paces,
 wherein Y represents a number of sensed cardiac events, and
 wherein X is less than Y.

25 32. The device of claim 31, wherein the processor controls the pacing circuit to
apply the synchronized cardiac pace X times for every Y cardiac events.

30 33. The device of claim 31, further comprising:
 a first pacing electrode disposed proximal to a first chamber of a heart; and
 a second pacing electrode disposed proximal to a second chamber of the heart;
 wherein the processor controls the pacing circuit to apply the synchronized
cardiac pace via the first pacing electrode and the second pacing electrode.

34. The device of claim 31, further comprising a sensing electrode disposed proximal to the heart, wherein the processor senses the cardiac event via the sensing electrode.

5 35. A device comprising:

a first pacing electrode disposed proximal to a first chamber of a heart;

a second pacing electrode disposed proximal to a second chamber of the heart;

and

an implanted medical device that determines whether cardiac

10 resynchronization is indicated and delivers pacing pulses to the first and second pacing electrodes when cardiac resynchronization is indicated.

36. The device of claim 35, further comprising a sensing electrode disposed proximal to the heart, wherein the implanted medical device senses a cardiac event via the sensing electrode and delivers pacing pulses in response to the sensed event.

37. The device of claim 35, the implanted medical device comprising a programmable processor that determines whether cardiac resynchronization is indicated.

38. The device of claim 37, further comprising memory that stores parameters for determining whether cardiac resynchronization is indicated.

25 39. A computer-readable medium containing instructions, the instructions causing a programmable processor to:

provide cardiac resynchronization to a heart during a first time period; and

refrain from providing cardiac resynchronization to the heart during a second time period.

30 40. The medium of claim 39, wherein the first time period is a fraction of a day and wherein the day is equal to the first time period plus the second time period.

41. The medium of claim 39, the instructions further causing a programmable processor to:

provide cardiac resynchronization to the heart during the first time period commencing at a first reference time; and

5 provide cardiac resynchronization to the heart during a third time period commencing at a second reference time.

10 42. The medium of claim 39, the instructions further causing a programmable processor to deliver a pacing pulse to a single chamber of the heart during the second time period.

15 43. A computer-readable medium containing instructions, the instructions causing a programmable processor to:

provide cardiac resynchronization to a heart in response to a first sensed event; and

refrain from providing cardiac resynchronization to the heart in response to a second sensed event.

20 44. The medium of claim 43, the instructions further causing a programmable processor to:

receive a ratio of X:Y; and

perform cardiac resynchronization X times for every Y sensed cardiac events.

25 45. The medium of claim 44, the instructions further causing a programmable processor to:

receive a second ratio of X2:Y2; and

perform cardiac resynchronization X2 times for every Y2 sensed cardiac events.

30 46. The medium of claim 43, the instructions further causing a programmable processor to deliver a pacing pulse to a single chamber of the heart in response to the second sensed event.

47. A computer-readable medium containing instructions, the instructions causing a programmable processor to:

sense an atrial event;

determine whether a bi-ventricular pace is indicated; and

5 deliver a bi-ventricular pace after the atrial event when the bi-ventricular pace is indicated.

48. The medium of claim 47, the instructions further causing a programmable processor to:

10 increment a counter after the atrial event; and

determine whether a bi-ventricular pace is indicated based upon the counter.

45 49. The medium of claim 47, the instructions further causing a programmable processor to deliver a pacing pulse to a single ventricle after the atrial event when the bi-ventricular pace is not indicated.